

Corrective Filters for Color Deficient Vision

Award Information

Agency:

Department of Health and Human Services

Branch

n/a

Amount:

\$729,272.00

Award Year:

2003

Program:

SBIR

Phase:

Phase II

Contract:

2R44EY012905-02A1

Agency Tracking Number:

EY012905

Solicitation Year:

n/a

Solicitation Topic Code:

n/a

Solicitation Number:

n/a

Small Business Information

BAY GLASS RESEARCH, INC.

BAY GLASS RESEARCH, INC., 2547 8TH ST, STE 35, BERKELEY, CA, 94710

Hubzone Owned:

N

Socially and Economically Disadvantaged:

N

Woman Owned:

N

Duns:

n/a

Principal Investigator:

DONALD MCPHERSON

(510) 548-4265

BAYGLASS@PACBELL.NET

Business Contact:

DONALD MCPHERSON

(510) 548-4265

BAYGLASS@PACBELL.NET

Research Institution:

n/a

Abstract

DESCRIPTION (provided by applicant): More than 10 million Americans suffer from color deficient vision. This deficiency can adversely effect job performance and make it more difficult to distinguish traffic signal lights. Using the same color correction model developed in our Phase I grant we will construct cone sensitivity functions from the recently identified gene sequences responsible for the color cone pigment shifts. From the shifted cones we can use the mathematical model we developed during the phase I grant to derive anomalous color matching functions and then map any color stimuli as seen by the color deficient into a normal standard color space. Additionally we can use our model to develop color corrective filters tailored to the individual cone pigment shifts. We have identified 10 sets of filters that will color correct for 21 cone pigment shifts associated with anomalous deuterans and protans. We will design and melt billets of the glass required for this study, and fabricate them into color-corrective eyewear. The color discrimination of 100 test subject will be studied at 2 test sites. Neutral density filters of the same luminance will act as controls. This set of 10 filters is unlike other corrective filters used for treating color deficiency. They are designed to correct the hue and saturation of colors for deuteranomalous and protanomalous individuals. We will identify 100 test subjects using the American Optical Company Hardy, Rand and Ritter (AO HRR) pseudoisochromatic plate test, and then from the Nagel Anomoloscope testing determine the probable wavelength shifts of the L and M cones responsible for the color deficiency. In this way we will select which of the 10 color corrective eyewear are most suited to each test subject. Each test subject will be tested using the desaturated D-15 cap tests, Farnsworth Munsell 100 Hue (FM-100) test, and Lanthony's desaturated cap test, the Farnsworth Lantern test as well as the Dvorine Color Matching Wheel, with and without the color-corrective eyewear. We plan to partner with a marketing and sales based optical company to distribute our color corrective eyewear.

* information listed above is at the time of submission.